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Posted at the Zurich Open Repository and Archive, University of Zurich

ZORA URL: <https://doi.org/10.5167/uzh-183184>

Book Section

Published Version

Originally published at:

Hielscher, Eva; Wietlisbach, Nadine (2020). Introduction: Color mania. The material of color in photography and film. Exhibition and publication. In: Flückiger, Barbara; Hielscher, Eva; Wietlisbach, Nadine. Color mania : the material of color in photography and film. Zürich: Lars Müller, 9-14.

Color Mania: The Material of Color in Photography and Film

Exhibition and Publication

Eva Hielscher and Nadine Wietlisbach

Since the emergence of film and photography in the nineteenth century, the two media have both featured color—a fact that has to this day often been neglected in cultural, art historical, and scientific debates and is almost completely unknown to the general public. In the early 1840s, such photographic forms as daguerreotypes and cyanotypes already contained color elements—the former produced by coloring techniques, the latter by chemical reactions in the printing process. Likewise, among the earliest motion pictures produced in the 1890s were colorful (hand-colored, tinted, and/or toned) spectacles.

But that is not all: in the course of the history of analogue photography and analogue film—both based on photochemically produced individual images or series of images—several hundred color processes have been devised, long before the digital age presented the two sister media with new challenges and possibilities. Many techniques involved autonomous or applied colors, while others were based on additive and subtractive processes that yielded mimetic—often referred to as “natural”—colors. The respective processes of photography and film were often closely interconnected. In addition to hand coloring, for example, the techniques of toning and stencil coloring became institutionalized in both media. Printing processes like Pinatype or Technicolor or screen processes like Autochrome or Dufaycolor were originally developed for the medium of photography, before later being utilized in the 1920s in film production. On the other hand, the Gasparcolor film color process, a silver dye-bleach technique from the 1930s, was revived in the second half of the twentieth century in the field of photography as Cibachrome.¹

The close association between still and moving pictures in relation to color is quite evident and demands closer study. Beyond the interconnections mentioned above, questions regarding content and the aesthetics of the use of color are fascinating, as is the fact that many materials that were produced using these color processes (and this is certainly true of the early techniques) remain unknown to a wider public. This has to do not only with the conservation of the materials and their colors but also with the nature of the media. Thus, while the

color layer of Autochrome glass plates, for instance, is extremely fragile and susceptible to damage from long-term exposure to light—which requires special precautions to be taken to protect the items in the exhibition space—the direct presentation of film strips, individual frames, and film reels is rather unusual, as it represents an inversion of their standard use. When screened in the cinema, these elements remained concealed from the audience's view behind the closed doors of the projection booth, where they passed through the film projector. In the auditorium, they were only visible as immaterial film images projected onto the screen.² However, these materials contain a uniquely captivating material aesthetic, while at the same time providing insights into the diverse range of color processes.

Color Mania focuses on these material aesthetics, on the historical and technical elements of the material as well as on the interconnections and processes of exchange between color photography and color film. By showing a variety of original materials and images created by means of diverse color processes, the exhibition attempts both to present an introduction to the history of color photography and color film and to provide visitors with an aesthetic experience. In this context, *Color Mania* features a series of objects and images that are usually only viewed by photo and film archivists and restorers. The presentation of such items—among them the Autochrome photographs of Swiss engineer Heinrich Sallenbach, hand-colored glass slides from Norwegian polar expeditions, Technicolor color scheme samples from the collection of its inventor Herbert T. Kalmus, and film strips and frames of various color processes from the Collection Gert Koshof³—poses several challenges in terms of the conservation of the materials and their colors. These include climatological aspects as well as the “color temperature” of the lighting, which plays a critical role in how the colors appear. For example, a glass slide or a film strip looks completely different when viewed under a yellowish light than on top of a light box with a color temperature similar to that of daylight.⁴

Yet *Color Mania* is more than just an exhibition of items related to historical color photography and color film. On the one hand, the analogue film documents are made to enter into a dialogue with digitally produced and greatly enlarged photographs of historical color film prints and a selection of (digitized/digital) film excerpts shown as moving images. Both display formats offer aesthetic experiences in which the materiality of film colors is brought to bear in different man-

ners. The digitally enlarged film strips allow for a sensual perception of color in the stationary individual frames of a film, and of the colored peripheral elements in the perforation and frameline area that give hints on the manufacturer of the film stock as well as the color process and techniques utilized.⁵ The projection of and in moving images shows how colors appear in standard film reception, that is *in motion*. Both forms of presentation also make reference to digitization and to issues related to the transfer and preservation of historical images in the twenty-first century. For while digital technology is increasingly displacing the material of analogue photography and film, many works will no longer be accessible in the future if they are not digitized.

On the other hand, the historical processes also enter into dialogue with contemporary art. The works of Dunja Evers, Raphael Hefti, Barbara Kasten, and Alexandra Navratil yield a wide range of connections to the history of color photography and color film, augmenting selected facets explored in the exhibition by means of historical materials and providing reflections on color, techniques, materiality, image production processes, photography, and film. Following an experimental and reflective approach, the historical is addressed and (re-)contextualized from the point of view of the present. In this way, *Color Mania* offers an aesthetic experience that allows for different (directions of) readings and entry points that intersect and combine within the exhibition space. Going beyond a purely chronological history of the development of color processes as portrayed through historical exhibits and a systematically elaborated timeline, the contemporary works allow visitors to examine the subject from a current perspective—inviting them to re-visit historical elements in rewind (or reverse motion) or through flashbacks. The sensory experience of viewing everything from extremely small film strips to projections and large-scale works takes visitors on a journey, providing new insights both to the general public and to professionals and specialists in the field through the multitude of presentational forms. A film colors app offers another way to further explore the subject matter, as it connects to the *Timeline of Historical Film Colors*.⁶ *Color Mania* has been conceived as an exhibition that combines both art and science.

Several thematic focuses reappear at intervals in the exhibition space, embodied by different documents and objects. All of these topics are related to the overriding theme of the materiality and aesthetic experience of color processes. Moreover, they refer to motifs or

content that frequently recur in color film and photography. Among these themes are the connections between color, the avant-garde, and experimental art (see the work by Raphael Hefti and the film images of the directors Len Lye and Éric Duvivier); color and the theme of travel (see Dunja Evers's photo series *Landschaften* as well as the film and photo materials from the expeditions of the Norwegian polar explorer Roald Amundsen); color and fashion (see the textile work of Alexandra Navratil and the film images from the MCCALL COLOUR FASHION NEWS series); and, finally, the political aspects of color, as manifested, for example, in references to various manufacturers of photographic and film color materials, in Amundsen's conspicuously colored flag amid the white polar landscape, and in the pictures of the film-coloring workshops of the Pathé Frères film production company, in which only female employees are to be seen.

This publication examines these thematic fields as they relate to different processes and techniques from the history of color photography and film, in order to broaden and deepen the scope of the exhibition. This means that it does not systematically follow the layout of the exhibition but rather delves deeper into selected elements and themes. In this way, the volume combines introductory essays on film and photography with a series of short texts by researchers in the fields of film studies and film restoration that shed light on the diversity of longterm research activities carried out within the framework of the *FilmColors* projects at the University of Zurich.⁷ These texts are supplemented by four essays on the contemporary works of Dunja Evers, Raphael Hefti, Barbara Kasten, and Alexandra Navratil, which open a different level of reflection on color, film, and photography. The *FilmColors* texts and the essays on contemporary artworks are interwoven through a series of cross-references. Moreover, they engage in dialogue with one another based on the order in which they appear.

The overview chapters on the history of color film by Barbara Flueckiger and on color photography by Thilo Koenig are followed by Franziska Kunze's essay on Dunja Evers's landscapes and portraits, in which she refers to autonomous color processes, discusses the media and art form properties of the works, and introduces us—via the landscapes—to the theme of travel. Eirik Frisvold Hanssen's article then focuses on the colors in the films and photographs of Roald Amundsen's South Pole expedition, before Evelyn Echle examines the colorful construction of the Orient in silent cinema. Eva Hielscher's essay discusses

the artistic exploration of early film colors in the works *All That Slides, Strikes, Rises and Falls* and *Split/Hatch/Mutate/Double* by Alexandra Navratil and fades, among others, to the subject of color and fashion. This in turn becomes the focus of the text by Olivia Kristina Stutz on material interactions between the photography, film, and fashion industries. Ulrich Ruedel tackles another kind of fashion in his text on tinting and toning, in which he demonstrates, among other premises, that these colors from silent cinema did not disappear entirely in the sound film era or went *out of fashion*. And yet from a film historical point of view the utilization of these autonomous color processes in sound films can be attributed to a more experimental character. Experimental qualities and chance are central aspects of the series *Lycopodium* by Raphael Hefti, as Nadine Wietlisbach emphasizes in her essay. The subject of color and experiment/experimentation is also to be found in Bregt Lameris's essay on Éric Duvivier's cinematic depiction of hallucinatory perception, in Joëlle Kost's text on the aesthetics of the chromogenic color films of the 1970s, and in Mona Schubert's essay on the colors floating in space in Barbara Kasten's *Architectural Sites*. Noemi Dugaard's text on Gasparcolor takes us from color and the avant-garde to the politics of colors, as it was the political upheavals and strategies of emergent Fascism in the 1930s that ultimately led to the disappearance/elimination of Gasparcolor. This is directly related to the standardization of film colors in the 1940s, which Michelle Beutler describes in her essay, and ties in with Josephine Diecke's text on Agfa-color in the domain of (inter)national competition, with an emphasis on the period after World War II. The publication closes with an interview that Simon Spiegel conducted with David Pfluger, Giorgio Trumpy, and Martin Weiss, providing insights into the complexity of the digitization and restoration of analogue (film) colors.

With all these facets, the exhibition and publication *Color Mania* expand the field of dialogue between photography and film via the material of color—in both a sensual and an experimental way.

1. For a detailed description of the individual processes, see the essays in this volume by Barbara Flueckiger, "Film Colors: Materiality, Technology, Aesthetics," 17–49, and Thilo Koenig, "(In)Visible Color: Plea for a History of Color Photography," 51–70.
2. Only in the early days of cinema around 1900, when the projection equipment and film materials themselves were still novel attractions, were the hand-cranked projector and the film rolls placed directly in the auditorium in plain view of the audience. See Tom Gunning, "The Cinema of Attractions: Early Film, Its Spectator and the Avantgarde," in *Wide Angle* 8, nos. 3–4 (1986): 63–70.
3. Gert Koshofer has been actively researching color in photography and film for decades and has published numerous books and articles on the subject. The Gert Koshofer Collection was acquired by Barbara Flueckiger in 2017.
4. The presentation and viewing of an image or object on a light box or its projection as an immaterial image on the wall can also produce completely different color impressions. See Giorgio Trumpy and Barbara Flueckiger, "Chromatic Callier Effect and its Repercussions on the Digitization of Early Film Colors," *Journal of Imaging Science and Technology* 63, no. 1 (2019), 10506-1–10506-11.
5. Moreover, this form of presentation also makes it possible to show film images that could otherwise not have been exhibited for conservation reasons. This applies, for example, to films which have not only survived as fragments or short film strips,

but—ideally—in the form of (complete) film reels. In addition to the value of these historical films, which cannot, of course, be cut up into individual elements for exhibition purposes, the large amount of inflammable cellulose nitrate film material used up until the early 1950s is another good reason for not exhibiting them.

6. This app offers the possibility of connecting different exhibits and film color processes with the *Timeline of Historical Film Colors* as well as the semi-automated film analysis platform VIAN. Barbara Flueckiger's timeline is an online resource that provides detailed information on the history, technology, and aesthetics of color film and some of its direct precursors in photography (filmcolors.org). The visual film annotation and analysis software VIAN (developed by Gaudenz Halter as part of the ERC Advanced Grant *FilmColors* project and in cooperation with Renato Pajarola's Visualization and Multimedia Lab at the University of Zurich) provides insights into the research on film colors and offers various options for visualizing the color schemes of color films. See Gaudenz Halter, Rafael Ballester-Ripoll, Barbara Flueckiger, and Renato Pajarola, "VIAN: A Visual Annotation Tool for Film Analysis," in *Computer Graphics Forum* 38, no. 3 (June 2019): 119–29.
7. The texts by Eirik Frisvold Hanssen and Ulrich Ruedel are the result of external collaborations connecting with the research activities in Zurich, to which their content relates.